

1 The opinion in support of the decision being entered
2 today is *not* binding precedent of the Board.
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4
5 UNITED STATES PATENT AND TRADEMARK OFFICE
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8 BEFORE THE BOARD OF PATENT APPEALS
9 AND INTERFERENCES
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12 *Ex parte* MANOHARPRASAD K. RAO, KWAKU O. PRAKAH-ASANTE,
13 and GARY STEVEN STRUMOLO
14

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16 Appeal No. 2006-2294
17 Application No. 09/683,779
18 Technology Center 3600
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21 Decided: August 29, 2007
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24 Before TERRY J. OWENS, HUBERT C. LORIN, and DAVID B. WALKER,
25 *Administrative Patent Judges.*

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27 OWENS, *Administrative Patent Judge.*
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30 DECISION ON APPEAL

31 The Appellants appeal from a rejection of claims 1-20, which are all of the
32 pending claims.

33 THE INVENTION

34 The Appellants claim a pre-crash sensing system and a method for operating
35 it. Claim 1 is illustrative:

1. A pre-crash sensing system for an automotive vehicle coupled to a countermeasure system having at least a first countermeasure and a second countermeasure comprising:

- a decision zone;
- a radar or lidar unit generating an object distance signal and object relative velocity signal from an object within said decision zone;
- a vision system generating an object size signal, said vision sensor confirming the presence of the object within the decision zone; and
- a controller coupled to said radar unit or lidar unit and said vision system for activating either said first countermeasure or the first and the second countermeasures in response to said object distance, relative velocity and said object size.

THE REFERENCES

Kosiak	US 5,835,007	Nov. 10, 1998
Farmer	US 6,085,151	Jul. 4, 2000
Lemelson	US 6,226,389 B1	May 1, 2001

THE REJECTIONS

The claims stand rejected under 35 U.S.C. § 103 as follows: claims 1-3, 5-16, 18 and 19 over Lemelson; claim 4 over Lemelson in view of Kosiak; and claims 17 and 20 over Lemelson in view of Farmer.

OPINION

We affirm the aforementioned rejections.

Rejection of claims 1-3, 5-16, 18 and 19

Claims 1, 6 and 15

Lemelson discloses “a system and method for operating a motor vehicle, such as an automobile, truck, aircraft or other vehicle, wherein a computer or computerized system is employed to assist and/or supplement the driver in the movement of the vehicle along a path of travel, such as a street or roadway and

1 may be used to avoid obstacles and accidents” (Lemelson, col. 1, ll. 14-20).
2 “[R]adar or lidar scanning may be jointly employed to identify and indicate
3 distances between the controlled vehicle and objects ahead of, to the side(s) of, and
4 to the rear of the controlled vehicle” (Lemelson, col. 6, ll. 9-13). Indications of
5 distances to such objects can be computed by obtaining identifying video or other
6 image information such as the size of the identified vehicle or other object and
7 comparing that information with shape and size information such as rear and front
8 profiles of all production vehicles and the like and their relative sizes or select
9 dimensions (Lemelson, col. 2, ll. 44-55). A “file contains necessary information to
10 make control decision[s] including, for example, hazard location (front, back, left
11 side, right side), hazard distance, relative velocity, steering angle, braking pressure,
12 weather data, and the presence or absence of obstructions or objects to the front,
13 rear, or to either side of the vehicle” (Lemelson, col. 9, ll. 1-6). “[T]he decision
14 computer may select the evasive action taken from a number of choices, depending
15 on whether and where the detection device senses other vehicles or obstacles”
16 (Lemelson, abstract). If necessary to avoid or lessen the effects of an accident, a
17 subsystem “stops the forward travel of the vehicle in a controlled manner
18 depending on the relative speeds of the two vehicles, and/or the controlled vehicle
19 and a stationary object or structure and the distance therebetween” (Lemelson, col.
20 3, ll. 13-18). Another subsystem that may be part of that subsystem or separate
21 from it “may generate one or more codes which are applied to either effect partial
22 and/or complete control of the steering mechanism for the vehicle to avoid an
23 obstacle and/or lessen the effect of an accident” (Lemelson, col. 3; ll. 19-23).

24 The Appellants argue that Lemelson does not disclose or suggest a decision
25 zone (Br. 4; Reply Br. 2). The Appellants’ Specification states (§ 0035):

Referring now to Figure 2, a vehicle 50 is illustrated having a decision zone in front thereof. The width of the decision zone is a predetermined quantity depending upon the width of the host vehicle. The longitudinal dimensions of the danger zone depend upon the relative velocity coverage requirements and the vision system coverage capabilities.... When an object enters the decision zone, the radar sensors are able to detect its presence and also obtain its relative velocity with respect to the host vehicle. When the object enters the decision zone the present invention is activated.

Thus, the Appellants' decision zone is the danger zone in which an object is detected and its relative velocity determined. Lemelson's zone in which objects are detected and their shapes, sizes, front and rear profiles, directions of travel, and relative velocities are determined (Lemelson, col. 2, ll. 29-38, 44-55) is comparable to the Appellants' decision zone.

The Appellants argue that Lemelson does not have a vision sensor that confirms the presence of an object within the decision zone (Br. 4-5; Reply Br. 2). The recited confirming was added to the Appellants' claims by amendment (filed Dec. 22, 2003). The Appellants have not pointed out, and we do not find, where the recited confirming is described in the Appellants' original disclosure.¹ Thus, we consider the visual sensing described in the Appellants' original disclosure to encompass the confirming added to the claims. Accordingly, we consider Lemelson's visual sensing (Lemelson, col. 2, ll. 44-55; col. 5, ll. 36-50) to encompass the Appellants' confirming.

Claims 2, 3, 7, 8 and 11

¹ In the event of further prosecution the Examiner and the Appellants should address on the record whether there is adequate written descriptive support under 35 U.S.C. § 112, first paragraph, in the Appellants' original disclosure for the confirming recited in the Appellants' claims.

The Appellants argue that there is no suggestion in Lemelson to generate an object size signal wherein the object size comprises height (Br. 5-6; Reply Br. 2, 4). Lemelson's visual detection of the shape and size of an object (Lemelson, col. 2, ll. 50-55) necessarily requires detecting the object's height.

Claim 5 and 10^2

The Appellants argue that Lemelson does not disclose a decision zone having a size dependent on a relative velocity signal (Br. 5; Reply Br. 3). That claim limitation was added by amendment (filed Dec. 22, 2003). The Appellants have not pointed out, and we do not find, where that limitation is described in the Appellants' original disclosure.³ Hence, we consider the Appellants' requirement of a decision zone size dependent on the relative velocity signal to be encompassed by the Appellants' decision zone in which relative velocity is determined (Spec. ¶ 0035). Lemelson's zone wherein relative velocity is determined (Lemelson, col. 3, ll. 13-18) is comparable to that decision zone.

Claim 9

The Appellants argue that Lemelson does not determine an object orientation in response to the object distance, size and type (Br. 6; Reply Br. 3). Claim 9 recites “height,” not “type.” Lemelson discloses that the object’s direction of travel (i.e., its orientation toward or away from the vehicle) is determined (Lemelson, col. 2, l. 34), but does not disclose how that determination is made.

² The Appellants do not separately argue claims 18 and 19 that depend from claim 10.

³ In the event of further prosecution the Examiner and the Appellants should address on the record whether there is adequate written descriptive support under 35 U.S.C. § 112, first paragraph, in the Appellants' original disclosure for the decision zone having a size dependent on the relative velocity signal recited in the Appellants' claims 5 and 10.

1 Hence, one of ordinary skill in the art, through no more than ordinary creativity,
2 would have determined the direction of travel from the relevant factors determined
3 by Lemelson such as the object's distance and how the object's shape and size
4 compare with the rear and front profiles, sizes and select dimensions of all
5 production vehicles and the like (Lemelson, col. 2, ll. 29-39; 44-55). *See KSR*
6 *Int'l. Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007) (In
7 making an obviousness determination one "can take account of the inferences and
8 creative steps that a person of ordinary skill in the art would employ").

9 Claims 12-14 and 16

10 The Appellants argue that Lemelson does not disclose activating a
11 countermeasure in response to an object's visually-measured cross-sectional area
12 or size (Br. 6-7; Reply Br. 4). Cross-sectional area is part of the size and shape
13 which are visually measured by Lemelson and used to activate countermeasures
14 (Lemelson, col. 2, l. 44 - col. 3, l. 31).

15 Rejection of claim 4

16 Kosiak is relied upon by the Examiner for a disclosure of a vehicle speed
17 sensor generating a speed signal corresponding to the longitudinal speed of the
18 vehicle, wherein a controller activates countermeasures in response to the
19 longitudinal speed signal (Office Action mailed Apr. 20, 2004, pp. 4-5).

20 The Appellant argues that Kosiak does not remedy the deficiency in
21 Lemelson as to the decision zone and confirming recited in claim 1 from which
22 claim 4 depends (Br. 7). As discussed above regarding claim 1, that argued
23 deficiency does not exist.

24 Rejection of claims 17 and 20

25 Farmer is relied upon by the Examiner for disclosures of activating a
26 countermeasure system in response to object size and vehicle orientation, and

1 either activating a first countermeasure comprising pre-arming airbags and
2 pretensioning motorized belt pretensioners, or activating that countermeasure and a
3 second countermeasure comprising adjusting the host vehicle suspension height in
4 response to object size and orientation (Office Action mailed Apr. 20, 2004, p. 5).

5 The Appellants argue that Farmer does not teach or suggest varying a
6 decision zone based upon relative speed (Br. 8). That limitation is in claim 10
7 from which claims 17 and 20 indirectly depend. The Appellants' argument
8 regarding that limitation is not persuasive for the reason given above regarding
9 claim 10.

10 The Appellants argue that object orientation is not set forth in Lemelson (Br.
11 8). The object vehicle's direction of travel determined by Lemelson (Lemelson,
12 col. 2, ll. 34-35) is a measure of its orientation.

13 For the above reasons we are not convinced of reversible error in the
14 Examiner's rejections.

15 DECISION

16 The rejections under 35 U.S.C. § 103 of claims 1-3, 5-16, 18 and 19 over
17 Lemelson, claim 4 over Lemelson in view of Kosiak, and claims 17 and 20 over
18 Lemelson in view of Farmer are affirmed.

No time period for taking any subsequent action in connection with this

appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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